

## **WHAT IS CLAIMED IS:**

1. A method comprising limiting at least one service to a radio device according to a location of the radio device.

2. The method of claim 1, wherein the radio device is a mobile station.

3. The method of claim 1, wherein said at least one service comprises at least one of:

a circuit originating call;

a circuit terminating call;

originating short message service;

terminating short message service;

additional service;

roaming service;

a packet originating call; and

a packet terminating call.

4. The method of claim 1, wherein the method is implemented in a mobile communication exchange.

5. The method of claim 4, wherein the mobile communication exchange comprises at least one of a packet exchange and a circuit exchange.

6. The method of claim 5, wherein:  
the packet exchange comprises a serving GPRS support node; and  
the circuit exchange comprises a mobile switching center and a visitor location register.

7. The method of claim 4, wherein:  
the mobile communication exchange is coupled to a home location register;  
the mobile communication exchange is coupled to a universal terrestrial radio network; and  
the mobile communication exchange is coupled to one of a public switched telephone network and an Internet protocol network.

8. The method of claim 7, wherein the mobile communication exchange is coupled to the Internet protocol network through a gateway GPRS support node.

9. The method of claim 1, comprising comparing the location of the radio device with a register, wherein the register comprises at least one predetermined relationship between location of the radio device and limitations on at least one service to the radio device.

10. The method of claim 9, wherein said limiting at least one service to a radio device according to the location of the radio device is in accordance with said at least one predetermined relationship comprised in the register.

11. The method of claim 9, wherein the register is a home location register.

12. The method of claim 1, wherein the location of the radio device is represented by at least one of:

a location area identifier;

a service area identifier; and

a routing area identifier.

13. The method of claim 12, wherein:

the location area identifier and the service area identifier are used for circuit service;

and

the routing area identifier and the service area identifier are used for packet service.

14. The method of claim 1, wherein prior to said limiting at least one service to the radio device, comprising:

detecting a handover of the radio device to a new location; and

prior completing the handover to the new location, informing a user of the radio device that at least one service to the radio device will be limited once the handover is complete.

15. The method of claim 1, wherein said limiting is in accordance with a request from a user of the radio device to limit at least one service to the radio device according to the location of the radio device.

16. An apparatus configured to implement the method of claim 1.

17. An apparatus comprising:

a home location register comprising predetermined relationships between limitations on subscriber services and location of a mobile station; and

a means for limiting a subscriber service to the mobile station according to the home location register.

18. A service control method using subscriber's location information for a mobile communication system comprising the steps of:

registering information on a service limit according to a subscriber's location in a service profile of the subscriber during a service change or subscription; and

if a service request is received, limiting the service on the basis of the mobile terminal subscriber's location information using registered contents of the subscriber's service profile.

19. The service control method of claim 18, wherein the subscriber's location information for limiting the service is expressed by a location area identifier (LAI), a routing area identifier (RAI), and a service area identifier (SAI).

20. The service control method of claim 18, wherein contents of the limited service include a circuit originating call, a circuit terminating call, an originating SMS service, a terminating SMS service, an additional service, a roaming service, a packet originating call, and a packet terminating call.

21. The service control method of claim 18, further comprising the step of, if the mobile communication subscriber initially connects to a mobile communication network after the information on the service limit according to the subscriber's location is registered in the service profile of the subscriber, transmitting the subscriber profile including service limit contents from a home location register to a mobile communication exchange to store the subscriber profile.

22. The service control method of claim 18, further comprising, when the subscriber requests the service, the steps of:

transmitting service contents and the location information to a mobile communication exchange;

comparing the transmitted service and a service request location with the service profile of the subscriber; and

if the service limit contents according to the service request area coincide with each other, informing the service limit contents to the mobile terminal subscriber, and rejecting the service.

23. The service control method of claim 18, further comprising, if a handover made by movement of the mobile terminal into a service limit area is produced while the subscriber is receiving the service, the steps of:

sensing the handover;

detecting a target location of the handover;

checking whether the target location corresponds to the service limit location;

if the target location corresponds to the service limit area, informing the service limit area; and

if the handover is made into the service limit area, informing the area in which the service is limited, and releasing the service.

24. The service control method of claim 18, further comprising, if the subscriber requests a change of service limit contents according to the subscriber's location, the steps of:

receiving a request for the change of the service limit contents from the subscriber;

correcting the service profile of the subscriber according to contents of the request;  
and

requesting the change by transmitting the corrected profile to a mobile communication exchange.

25. A service control method using subscriber's location information for a mobile communication system provided with a mobile terminal, a home location register (HLR), and a mobile communication exchange, the method comprising:

a first step of registering a service limit according to the location information;

a second step of extracting a kind of a service requested during a service request and a location of a subscriber; and

a third step of limiting the service if a present location of the subscriber is included in a limited location of the extracted service.

26. The service control method of claim 25, wherein the first step comprises the steps of:

storing contents of the service limit according to the location information in the HLR; and

if the subscriber's mobile terminal connects to a mobile communication network, the mobile communication exchange reading out a service limit profile according to the location information from the HLR.

27. The service control method of claim 25, wherein the second step comprises the steps of:

the mobile communication exchange receiving the service request from the mobile terminal; and

the mobile communication exchange extracting the location of the mobile terminal that has registered the service limit according to the kind of the received service and the location information.

28. The service control method of claim 25, wherein the third step comprises the steps of:

the mobile communication exchange judging whether there is a location limit in the extracted service, and if it is judged that there is no location limit in the extracted service, normally processing the requested service;

normally processing the requested service if there is the location limit in the extracted service, but the present location of the subscriber is not included in the limited location; and

reporting the service limit area and refusing the service if the present location of the subscriber is included in the limited location of the extracted service.

29. The service control method of claim 25, wherein at the first step, the service limit is effected by registering at least one limited area among a location area identifier (LAI), a routing area identifier (RAI), and a service area identifier (SAI).



30. The service control method of claim 25, wherein contents of the limited service include a circuit originating call, a circuit terminating call, an originating SMS service, a terminating SMS service, an additional service, a roaming service, a packet originating call, and a packet terminating call.

31. The service control method of claim 25, wherein at the second step, the mobile terminal requests a service request message including variables required for the service, the kind of the service, and the location information to the mobile communication exchange during the service request.

32. A service control method using subscriber's location information for a mobile communication system provided with a mobile terminal, a home location register (HLR), and a mobile communication exchange, the method comprising:

- a first step of registering a service limit according to the location information;

- a second step of detecting a handover target location of the subscriber who has registered the service limit according to the location information when the subscriber receives the service; and

- a third step of releasing the service if a handover to the service limit area occurs.

33. The service control method of claim 32, further comprising the step of reporting in advance the subscriber of the service limit area if the target location moves to the service limit location before the third step.